Southwestern Medicine

PUBLISHED MONTHLY

Volume V. El Paso, Texas, May, 1921 No. 5

Annual Subscription $2 Membership $1 Single Copies 25 Cents

Entered at the Postoffice at El Paso, Texas, as second class matter.
"Acceptance for mailing at special rate of postage provided for in section 1103, Act of October 3, 1917, authoriezd March 1, 1921."

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RESERVE ENERGY OF THE HEART

(Read before the 28th Annual Meeting of the Arizona State Medical Association, June 2, 1919, Globe, Arizona)

BY
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The reserve energy of the heart is the power contained within the heart to respond to effort. In the normal heart, we find this reserve energy is sufficient to withstand tremendous amounts of sudden or prolonged over-exertion on the part of the individual.

The heart's function is to supply the power which maintains the circulation. In health, the various parts of the circulation co-ordinate to facilitate the work required of the heart. Any alteration in this arrangement demands more effort of the heart. If the disturbance is slight, the heart responds to the demand made upon it with no apparent effort. It is, however, using some of its reserve energy. If the demand is great, as in nephritis, pneumonia, et cetera, the heart may be called upon to supply more energy than it has in reserve. We then get a condition of impairment of the reserve energy, having the toxic condition within the system, as well as the impaired tissues in the other organ or organs requiring extra effort of the heart, making an increased demand on the reserve energy.

The reserve energy of the heart may be reduced by various causes, from enough to withstand tremendous demands, until there is just

enough force remaining to maintain the body at rest. Any reduction below this point produces symptoms of impairment of the heart, or heart failure. Unless the energy of the heart can be restored to above this point, fatal termination is inevitable.

All muscle requires a period of rest after exertion; this, in the normal heart, is the pause from the end of systole to the beginning of the next contraction.

A normal healthy person is capable of performing a hard day's work after a period of rest. Man has so arranged his work that in the normal condition the period of work and time of rest required to restore normal energy is a day of twenty-four hours. If his energy is impaired, he is so fatigued by a normal day's work that in the remaining hours of the twenty-four, he is not able to fully restore the energy required for the next day, and we have a condition of reduction of the reserve energy.

The reserve energy of the heart may be reduced from the amount which permits of tremendous exertion with a normal period of rest restoring that used, to all degrees of impairment of the reserve energy, to being unable to maintain the body when at rest, or heart failure.

Many persons indirectly or unconsciously recognize their loss of reserve energy; they are aware they cannot perform certain normal exertions without more fatigue than formerly, or what is manifest in others doing the same thing, and wisely trying to. Unfortunately, all people do not do this and for fear of criticism, or of being considered lazy or getting old, attempt to do what a normal, healthy person can do,—usually with sad results.

The rate of increase of loss of energy of the heart is in proportion to the amount of inequality in work done and rest required. If a person can perform—say four hours' work, and complete restoration occurs in twenty hours, and they only do four hours work a day, then they balance their periods of rest and effort. If, however, they work for six hours and only rest eighteen, then they are using up their reserve force and in time will exhaust it.

Too much attention cannot be paid to the early diagnosis of so-called failing compensation, heart failure, decompensation or, as I prefer to call it, loss of reserve energy. You all have patients who complain that they are feeling tired, languid, are nervous, irritable and run-down. After a careful examination, no symptoms seem to be present which will account for the conditions complained of. If, however, more detail is given to the beginning or onset of the condition, careful questioning will nearly always elicit the information that this condition has been very slow in its onset. At first they only felt tired and exhausted after some prolonged exertion. This may have been years before. Since that time, they have noticed that they have gradually, as they usually put it, become weaker. It is my belief where there is no other demon-

strable condition which can account for the symptoms, that we have to deal with a condition of loss of reserve energy.

Undoubtedly today we have more people over 45 or 50 years of age suffering from loss of reserve energy than from any other disease, tuberculosis not excepted. I am firmly convinced that all cases of neurasthenia are in this condition, while many people are born, or from illnesses in early life, are below normal, physically, as the moron is mentally, they must be classed as having a lack of reserve energy.

The symptoms of *Heart Failure* are:

The characteristic cardiac cough, which you all know so well, the dry, hacking cough with little or no expectoration, and which is increased on slight exertion, decreasing or subsiding when the patient is at rest.

Abnormal breathing, such as rapid breathing, inability to stop breathing, breathlessness, air-hunger, suffocation, tightness of chest, cardiac asthma.

The pulse may be rapid, 90 to 130 or 140, or slow as in heart-block 30 to 40, or irregular as in sinus-arrythmia, auricular flutter and auricular fibrillation.

Patient is conscious of heart's action.

Discomfort on exertion.

Head Symptoms, as weariness on mental effort, giddiness, failing memory for recent events.

Stomach Symptoms, sensation of fullness, gas, belching, and eructations of food.

The Liver enlarged, tender, or both.

There may be pains in the extremities, especially in the wrist and ankles.

Oedema may be local as Pulmonary, general superficial, or general.

The Heart may be enlarged, normal in size, or small.

Blood-pressure may be high or low.

Arterio-sclerosis may or may not be present.

Kidney complications may or may not exist.

Patient may not be comfortable when at absolute rest, or comfortable when at absolute rest only, or able to make from very slight effort, to moderate effort.

TREATMENT. Rest — Rest — Rest. I cannot strongly enough emphasize the word. Rest is imperative.

No one I have ever known or heard of, obtained better results in the treatment of nervous conditions than did the late Doctor S. Weir Mitchell of Philadelphia, with what is known as his "Rest Cure." His method of treatment was to have the patient take absolute rest,—away from business and family annoyances, and a diet carefully supervised to build up the physical condition.

I had the pleasure of working under him for some years and the cures were of those patients who were, as we say, run down and who

had no organic lesions, but had all kinds and descriptions of nerve manifestations. As I see it now, these patients were exhausted, they had used up their reserve energy including that of the heart. Therefore, the heart could not supply nutriment to the body in the amount necessary to maintain normal health.

After REST, in importance, is DIET. Where there is loss of reserve energy of the heart, there are digestive disturbances. After taking food into the system, the impaired heart cannot supply the extra demand made upon it to promote digestion. We have, therefore, to select a diet which can be digested by the person under our care. Overeating—by this I mean more than the individual can take care of—causes just as much extra effort on the part of the heart as any form of over-exertion. The healthy can do this and take care of the excess of food for a time; those below par cannot.

Regarding drugs,—occasionally they are necessary and a great help. The attempt to create or replace lost energy by their use, cannot be too strongly condemned.

Patients improve faster by taking absolute rest than by partial rest, while many cases can be, and, owing to their circumstances, must be treated while attending to their usual vocation which is necessary in order to earn a livelihood for themselves and possibly a family.

Or, it may be the mother of a family of growing children and their circumstances do not permit of her taking absolute rest. In these conditions we must find out how much effort she can make during the day and be able to recuperate within the remaining twenty-four hours, and then have the patient do less than her maximum, so that we have going on a process of conservation of energy. While this method is slower and often discouraging, still if persisted in, normal conditions can be restored. It will take a great deal more time, but we are often compelled to use this method.

The method of treatment in those who are fortunate enough to be able to carry out the best form of treatment, is to put them at absolute rest, with a light, easily digested diet, careful attention being paid to the stomach and intestinal tract. Passive exercise and light massage are beneficial. It is necessary to have mental as well as physical rest; this is why so many patients improve more rapidly when they go to some sanatorium or health resort.

Analysis of the symptoms present in one hundred of my cases, taken as they came alphabetically from the files, showed:

Cough—Unfortunately I did not note the absence of cough, so can only give the number of cases in which it is noted, 61.

Abnormal breathing in 96 cases.

Pulse rate abnormal in 78.

Cardiac irregularities in 32.

Patient conscious of heart's action, 92.

Discomfort on exertion, 100.
Head symptoms, 84.
Stomach and Intestines, 84.
Liver, 26.
Pains in extremities, 80.
Oedema, 36.
Heart enlarged, 80.
Valve lesions present in 34 cases.
Arterio-sclerosis in 42.
Blood-pressure, high, 40.
Blood-pressure, low, 32.
Blood-pressure, average normal, 28.
Kidney complications, 36.
Following infectious diseases, 62.
Comfortable in bed only, 54.
After treatment for varying lengths of time, patients able to recuperate after slight effort, 58. After moderate effort, 40.
Able to perform normal amount of work, 2.

Case No. 1

First came under my observation June 23, 1909.
Male; age 41. Captain United States Army Medical Corps.
Had been in Cuba for previous two years.
Gave a history of severe attack of Grip in 1889.
Since that time, frequent attacks of severe Tonsilitis and Quinsy; attack of Dengue Fever in 1907. In October, 1908, had a severe fever for ten days, which none of the physicians seemed to be able to diagnose.

During his first year in Cuba he had plenty of exercise, riding, et cetera. After the attack of Dengue Fever he was attached to the Yellow Fever Commission as Microscopist and was unable to get any exercise during this year. Was then ordered to take the army test ride; at the end of twenty-five miles, or a little over an hour, he collapsed with acute dilatation of the heart. Was not very severely incapacitated.

Symptoms seemed to have entirely disappeared with about ten days' rest. Pulse during attack, up to 120. He then went back to his regular routine work. Soon after was ordered to the United States. Sent to Fort McKenzie (elevation 4000 ft.) where he found his heart was affected by the altitude. Asked for transfer and was transferred to Fort Cook, near Omaha, where the surgeon made a diagnosis of Myocarditis. He then consulted Doctor Barker of Baltimore, and Doctor De Costa of Philadelphia.

Spent a month in Atlantic City resting; then made a trip to California; was here three or four weeks. Was advised by the Army Surgeon here and Doctor Kerr of San Francisco, not to resume work.

He decided to take a long rest, and probably have to retire from the army.

His appetite was variable, bowels regular, slept very poorly, some vertigo; dyspnoea on exertion.

Pulse, resting, 70 to 74; on the least exertion such as walking about the room, it would go up to 120.

HEART enlarged, first sound weak, second normal. Lungs clear. He was put at rest for six weeks, with massage and Nauheim Baths, careful diet, and bowels kept regular.

At the end of this time he returned to the United States, rested for some weeks and then went before the Army Board for physical examination, which he passed, and was promoted to Major.

He came under my care again on May 9, 1912, and gave the following history of his condition: After the rest and treatment in 1909, he went before the Army Board for physical examination and was found normal, passed, and promoted from Captain to Major.

He continued in perfect health and doing full duty until in October, 1911, when preparing to take the annual test ride prescribed for field officers, he again suffered from dilatation of the heart, followed by shortness of breath on the least exertion, slight angina and very slight lassitude, out of all proportion to the work done. Pulse between 100 and 120, thready. A medical officer found the heart dilated to outside of mid-clavicular line.

He had ridden about twenty miles a day during the first year after being under treatment, with no discomfort or appreciable symptoms. Had not ridden much before preparing for the ninety mile ride.

Examination showed the HEART enlarged, apex 11½ centimeters to left of midsternal line. First sound very weak and diffuse, second normal. Blood-pressure, systolic 124, diastolic 84. Pulse, resting, 68, on slight exertion increasing to 100 and to 120. After this attack in October he was put on digitalis by Doctor Kerr of San Francisco and continued it, except for the missing of an occasional dose, until the middle of April.

One week after beginning rest, his pulse became much slower, averaging from 48 to 62 during the day.

He was very anxious to smoke, which seemed to have a marked effect on him. A test made showed, before smoking, pulse 62, going to 84. Again, with pulse at 62, smoking a cigarette increased the rate to 88.

He was under my care this time from May 9th until the middle of August. Pulse in May was from 100 to 124 on slight exertion. On August 12, after the usual exertion test, pulse did go above 76. His pulse rate would increase more by sitting down and smoking a cigarette than by taking ten minutes of the army set-up drill, showing great susceptibility to tobacco.

Since his return to the service September 19, 1912, he has been continually on duty and unless it has happened very recently, has had no discomfort. He is, however, paying some attention to himself and not taking any chances of over-exerting.

Case No. 2

Came under my care May 28, 1915. Male. Six years old.

Chickenpox in childhood. Some trouble with tonsils and adenoids. Tonsilectomy and adenoids removed one year previous.

Appetite good; sleeps well; bowels regular.

Six or seven months previous, felt sick one morning. Parents had him examined and the doctor said he had some cardiac disturbances. He was put to bed for about a month, and at the end of that time he seemed to be perfectly well. On getting up and about, however, his heart gave trouble; he could not make any effort without becoming distressed. He was again put to bed for three months; was up for less than a week after this when he had another attack of cardiac insufficiency.

Physical examination showed: HEART, apex sixth interspace 6½ centimeters to left of midsternal line. Cardio-hepatic angle good. Faint systolic murmur heard at apex, more pronounced standing than reclining. First sound, ringing; second, normal.

Lungs, normal. Liver enlarged one inch below margin of ribs. Spleen no apparent enlargement.

Pulse rate 100 when quiet; 120 after exercise, walking about the room. Blood-pressure, systolic 90, diastolic 60.

From the fact that he had had two attempts at recovering from the heart condition, I told his parents that he would probably have to take absolute rest for a year. After talking with me and finding out that I really meant this, they returned to their home in San Francisco. I was very much surprised in about ten days to see them in my office again, and the father bluntly told me, "Well, we have come back to try your year's punishment."

The boy was put to bed, with a good nurse in charge of him, and kept at absolute rest with careful attention paid to his diet, for a little over a year. It was at least six months before his heart seemed normal. We found then that on trying slight exertions, the rate would increase out of proportion to the work done; so the rest was continued, these trys being made from time to time—none of them severe—just enough to see if he had established enough reserve energy of the heart to allow him to be up and about.

In July, 1916, we began by letting him sit up for one-half hour periods—first once a day, then twice, then three times, and then increasing the periods and the frequency, until in August he was able to go out for short walks.

He then returned to San Francisco. I have seen him from time

to time and he has had no return of any of the symptoms of loss of reserve energy. Since he was under my care, he has spent part of a summer in Yosemite Valley, six weeks in Yellowstone Park, made a trip to Alaska. His mother watches him very carefully and at no time, even in the altitudes in which he has been, have they ever found his pulse rate above 80 when at rest, and if he gets fatigued the pulse returns to 80 or below in a very reasonable time.

I last saw this patient the end of September, 1917, a little over two years after first seeing him. He was very well; there was no symptoms of any cardiac disturbances. Felt well; was going to school and playing as a normal boy of eight years should.

Case No. 3

This case came under my care in 1907. Male, 60 years old; married.

Always well except attack of typhoid in 1885.

Bad attack of gout in 1903, and several slight attacks of bronchitis.

Attacks of dizziness and headaches for some years.

Marked eczema for the past twenty years.

Uses alcohol to excess.

Heart slightly enlarged. Pulse 100. Blood-pressure, systolic 250.

Kidneys showed Albumen and Hyaline Casts.

He would not take absolute rest nor give up alcohol entirely, but did reduce the amount of work he was doing, and reduced the alcohol intake about one-half.

After six months of this partial treatment, his blood-pressure was reduced to 180, pulse ranging from 76 to 82. Kidneys showed no albumen and no casts. With the assistance of his family, I was able to persuade him to do very little work and to reduce the intake of alcohol. He continued to keep in fair condition until 1917, when he succumbed to an attack of Lobar Pneumonia.

BOOK REVIEW

Diagnostic and Therapeutic Technic. A manual of Practical Procedures Employed in Diagnosis and Treatment. By Albert S. Morrow, M. D., late Lieut-Colonel, M. C., U. S. A., Attending Surgeon to the City Hospital; and to St. Bartholomew's Hospital, New York City, Consulting Surgeon to the Nassau Hospital, Mineola, L. I. Third Edition, Entirely Reset, Octavo of 894 pages, with 892 illustrations, mostly original. Philadelphia and London. W. B. Saunders Company, 1921. Cloth, $8.00 net.

This work is a compilation of descriptions of a great number of diagnostic and therapeutic procedures ranging from the collection of specimens for laboratory examination to transfusion. The technique of general measures is first described, later methods of examination and treatment of various organs. The technical steps are described in detail and repetition is carefully avoided. The chapters on such simple measures as vaccination and administration of diphtheria antitoxin would seem superfluous and those describing procedures like bronchoscopy or fulguration of bladder tumors are so distinctly special as to hardly interest the average physician. The numerous illustrations of the instruments required for certain measures and of the various steps of the procedure permit the reader to grasp the entire process in short order.

—E. A. D.

MANAGEMENT IN CHRONIC HEART DISEASE

BY
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"By the intelligent interrogation of patients, with a due appreciation and understanding of their sensations, a knowledge of the heart's efficiency in the vast majority of patients can be got in a few minutes, more reliable and instructive than an examination made by a series of specialists employing the most elaborate mechanical means." (1). The above is quoted from "The Future of Medicine" by Mackenzie, not a work on the heart but a book written in part as a plea for the simplification of medicine. Upon the recognition of cardiac symptoms and their careful evaluation depends the prolongation of the patient's life. I do not here have in mind those patients who are first seen in decompensation with dyspnoea, cyanosis, edema, venous distention, etc. These signs are only too evident and the disease is far advanced. I refer to cases in a far earlier stage whose symptoms of circulatory impairment consist in a diminished capacity for physical work. Every heart has a certain reserve of power which comes into play in response to physical effort. This is the first to suffer when failure begins. Laboratory instruments have failed to demonstrate how much the reserve may be diminished and information can be got only by observation of the symptoms produced by exertion. The importance of the recognition of reduced exercise tolerance cannot be overemphasized. It is a grave error to attempt to determine prognosis and treatment on a basis of differentiation of organic and functional conditions. The detection of some physical sign does not mean that some indefinite danger lurks in the future and that the patient must therefore be subjected to prolonged and unusually unnecessary treatment and restrictions.

Thomas Lewis in a recent paper makes the following statement. (2): "It never has been shown, nor will be shown, that all instances of structural change in the heart are serious; it never has been shown, nor will be shown, that affections in which the heart is suspect but which are accompanied by no evidence of structural disease are of trivial import." A patient is seen with a "scar on the pericardium or on the edge of a mitral valve, a healed scar which never had and never will cause inconvenience, provided no medical man discovers in him the signs of it and misinterprets its significance." "The other side of the picture shows men who are genuinely distressed when they exert themselves in any way, but who, presenting no cardiac signs other than those of a supposedly 'functional condition,' are dealt with casually or cavalierly." The first step in the study of any cardiac patient, actual or presumed, is the determination of the presence of a reduced tolerance for exercise and its degree. It may be flatly stated that no patient with

normal exercise capacity suffers from serious heart disease, and furthermore, that the gravity of the disease is directly proportionate to the reduction in exercise tolerance.

The three cardinal signs of circulatory embarrassment are breathlessness, cardiac pain or sensation of constriction and fatigue. The breathlessness in these cases spells insufficient blood supply to the respiratory center; pain and fatigue result when muscular tissue works without adequate blood supply. The evidence is in when the patient states that he can no longer without distress perform some previously accustomed exercise. No test has yet been devised by which this failure of the circulation to hold up under stress can be put in cold figures though many such efforts have been made. (3). Effect of exercise and of change of position on pulse and blood pressure, persistence of tachycardia after exercise, effects of femoral artery compression, the systole-diastole-rate index of Barach, (4), etc., are all of some usefulness. Whatever the test may be its purposes are the same, namely, to establish a basis for the estimation of the reserve force of the heart and to govern prognosis and therapy accordingly. The opinion of Mackenzie as stated above cannot be questioned but some routine test for the physician is probably desirable. Such a one is the familiar test used by the cardio-vascular examiners in the Army. (5).

1. Take pulse and blood pressure in the recumbent position.
2. Let patient hop 100 times on one foot.
3. Take pulse and blood pressure as before, noting presence and degree of dyspnoea.
4. At the end of two minutes again take pulse and blood pressure and note dyspnoea.

At the end of the two minute period the pulse should have returned to within a few beats of the original rate and the blood pressure should at about its first level; any breathlessness should have disappeared. In other words, the effort of the test should be accomplished without marked effect on the circulation and any such effect should promptly vanish.

These three signs of early circulatory failure may be caused by certain other conditions to be mentioned later but that the heart is not at fault must be proven by further examination. If no other evidence of heart disease is found these conditions must be considered, although it is likely that the heart will be found in difficulty in the final summary.

The existence of circulatory impairment having been established, further investigation as to its cause and degree is necessary. The presence of cardiac enlargement is the next to determine, and this by the ordinary methods of physical examination, although in exceptional cases of emphysema or obesity resort to the X-Ray may be necessary. Needless to say the size of the heart indicates the extra work which

that organ has borne and which has required its dilatation and hypertrophy.

The recognition of two forms of valvular disease, namely, aortic insufficiency and mitral stenosis is of greatest importance, not that they mean so much in themselves except that the heart must compensate for them by more work, a condition existing with any defective valve mechanism, but in that these two conditions spell degenerative change in the heart muscle, be it rheumatic, syphilitic or of other infectious origin. Both conditions are readily recognizable by ordinary methods of examination and require no description except that it may be well to state that the diastolic murmur or rumble in mitral stenosis may be overlooked unless the patient is examined after exercise and in the recumbent position. Other valvular defects are of far less importance in prognosis and therapy.

At this point it may be w ell to mention the ureliability of heart murmurs in the diagnosis of chronic heart disease. Application of the stethoscope without further examination is all too common a procedure and cannot be too strongly deprecated. Deductions from the presence or absence of murmurs are apt to be erroneous. Diastolic murmurs are, of course, of importance though hemic diastolic murmurs are described. Systolic murmurs at any valvular area in the absence of other signs of valvular disease are of little significance. It is often if not usually possible to make a diagnosis in valvular diseases by palpation and percussion alone and the auscultatory part of the examination gives only added information.

The presence of auricular fibrillation in any heart patient is always a serious matter. Like the two forms of valvular disease mentioned above it means myocardial damage. In any case of irregular heart action it is necessary to know whether or not fibrillation is present, and this is not a matter where the polygraph or electrocardiograph is a necessity though both instruments show the condition beautifully. Fibrillation must be differentiated from the harmless and insignificant forms or arrhythmia, namely, sinus arrhythmia and that due to extrasystoles. One of the most satisfying services the physician can perform is the reassurance of the frightened patient who comes for examination complaining that his heart is "skipping beats" or "beating fast then slow" or who has been told that he has a heart murmur. For practical purposes the following tests for the detection of fibrillation usually suffice. If the pulse is absolutely irregular as to time and size of beats fibrillation is probably present. If the pulse accelerates on inspiration fibrillation is not present. If the heart rate is over 120 and still irregular fibrillation is present.

Every case of chronic heart disease must be considered as to the possibilities of active infection. Evidence of its presence seriously influences prognosis and makes bed treatment imperative. The main

signs of infection are, 1. Fever. 2. Pulse rate over 100 with patient at rest. 3. Petechiae, especially in the mouth and at the root of the neck. 4. Pallor. 5. Gradual loss in weight. 6. Palpable spleen. Obviously fever, loss in weight and rapid heart action occur in other conditions notably tuberculosis, other chronic infections and hyperthyroidism and these diseases must be borne in mind and all symptoms and signs considered collectively. The heart once the seat of an endocarditis is prone to undergo recurrences.

During the War interest was revived in the so-called irritable heart of soldiers, first described during the Civil War by Da Costa but which had been almost forgotten. The condition is not peculiar to soldiers nor even to the male sex. In brief, it manifests itself by the signs of diminished exercise tolerance, breathlessness, pain and fatigue on exertion, together with rapid pulse, tremor and low vaso-motor tone. Some observers have held this condition to be essentially hyperthyroidism but others contend that it is primarily cardiac. It does, in fact, differ from hyperthyroidism in that there is no true exophthalmos, the tremor is much coarser, the heart rate falls during sleep and basal metabolism is not raised. Lewis believes that infection is responsible for the condition. Cohn (6) believes it a war neurosis. The treatment has been graduated exercise and especially means to control the neurotic state.

The estimation of cases with decreased exercise tolerance is governed by the age of the patient as well as by the other evidences of cardiac disease. When this condition occurs in young individuals who present no other signs of heart disease the probabilities are that the heart is not primarily the seat of the trouble and tuberculosis, other infections and hyperthyroidism must be looked for. On the other hand, in elderly persons diminished exercise tolerance, even in the absence of other definite signs of heart disease must be regarded as cardiac in origin.

Prognosis in chronic heart disease is determined by a variety of factors and observation over a more or less extended period is advantageous. Marked and permanent reduction in exercise tolerance makes the outlook grave. The existence of mitral stenosis or aortic insufficiency and the presence of auricular fibrillation are serious. In cases with fibrillation, with pulse over 120 and without response to digitalis the prognosis is grave. Valvular defects other than those mentioned are of far less importance and combined valvular lesions influence prognosis only in so far as they mean added work. Active infection is a serious matter in any case. Marked enlargement is unfavorable. Economic status in relation to the possibilities of avoiding strain is important. Other things being equal the piano mover in his first breakdown has usually a better outlook as to length of life than the old lady of sedentary habits and in the same condition provided he will change

his occupation. Intercurrent febrile diseases are unfavorable events in these patients and pneumonia is especially dangerous.

The physician is repeatedly called upon to decide whether or not a woman with chronic heart disease can stand pregnancy and labor. The available statistics refer only to valvular disease and are of doubtful reliability. No fast rules can be laid down except to state that a heart with a sound myocardium stands labor well. Here again appears the great value of exercise tolerance estimation. In general a patient with good cardiac functional capacity, without marked enlargement and without aortic insufficiency, mitral stenosis or auricular fibrillation may undertake pregnancy with very little danger. This is especially true if she is watched closely during pregnancy and labor is artfully managed.

The one great principle in the treatment of chronic heart disease is rest, whether that be accomplished by avoidance of strain, slowing up of body functions or by digitalis. Absolute rest in bed is imperative in cases of decompensation and in the presence of infection. In the great mass of compensated cases treatment consists in the regulation of their lives so that they are made to realize the point in exercise at which cardiac distress begins and to stay below that threshold. No heart fails as long as its capacity for work is not exceeded. In the ordinary case it is seldom advisable to recommend a change to an absolutely sedentary occupation. Exercise is wholly beneficial as long as the limits of the hearts' tolerance are not over-stepped. No cardiac patient should call forth his whole reserve and repeated excesses in exercise are apt to be disastrous. Digitalis is not properly a cardiac stimulant but a sedative in that by lengthening diastole the myocardium is allowed to rest. The stimulant action is subordinate to this slowing effect. Its greatest value is in cases of fibrillation where rest is achieved by slowing the ventricular rate. In urgent cases the Karell diet of 800 to 1000 cc. of milk in 24 hours without other food or fluid and the rapid administration of digitalis by the Eggleston method will save much time. The large doses of digitalis so given, twenty-two cc. of the tincture in twenty-four hours to a man of 150 lbs. may seem excessive but they are devoid of danger if proper precautions are taken. First, the patient must have had no digitalis during the preceding ten days; if this is the case the dose must be much reduced. The total dose should be divided into four portions, one of which is given every six hours, thus allowing for absorption and adequate observation of effect. Administration should be stopped at once on the appearance of toxic symptoms, namely, 1. fall in heart rate to below sixty; 2. nausea; 3. heart block; 4. coupling of beats.

Patients with active infection require prolonged rest in bed and careful nursing. This is especially true in children with rheumatic endocarditis. The object is not only to permit the subsidence of the infection without increasing the damage to the myocardium but also to

allow full adjustment to any newly developed valvular defect. Local foci should be treated as the possible source of the infection.

General care of the digestive apparatus is important. Excesses in eating are to be avoided since they may embarrass the heart by flatulence and also give rise to intestinal disorders. An overload of the digestive system is in itself a cause of added heart work. Anginal attacks are not uncommonly the result of a heavy meal and the stomach usually ejects its contents. This is often the "acute indigestion" of the laity. No damaged heart should be required to pump blood through a great, fat body and it is almost as important for the obese cardiac as it is for the obese diabetic to reduce weight. Cold and very hot baths are powerful raisers of blood pressure and should not be allowed. In individual cases the effects of tobacco, coffee, alcohol and sexual indulgence deserve investigation.

In closing it is to be emphasized that the most valuable guide in prognosis and treatment in chronic heart disease is the circulatory response to exercise. Other indicators give valuable information but secondary to what can be learned by study of the cardiac reserve, and its accurate estimation determines the point where rational treatment begins.

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SANTA FE COUNTY MEDICAL SOCIETY

Santa Fe, New Mexico, March 8, 1921.

Whereas, It has pleased God in His infinite wisdom this day to remove from us our beloved president, Dr. Roy H. Ferguson; and

Whereas, We wish to express our sorrow for the loss of our esteemed fellow-physician; be it therefore

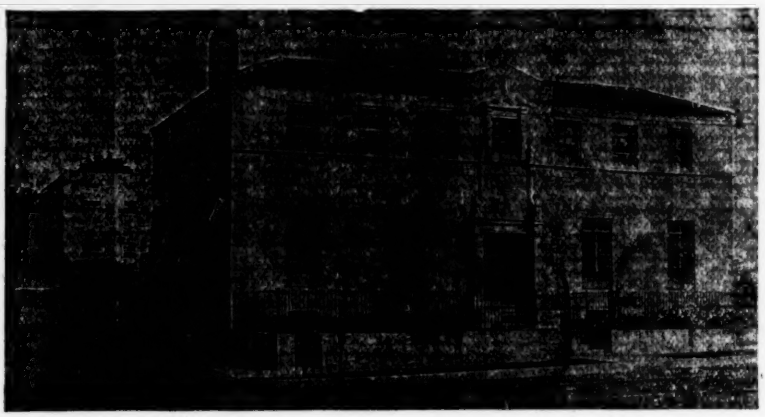
Resolved, That we, the members of the Santa Fe County Medical Society, extend our heartfelt sympathy to his family in their bereavement; and be it

Resolved, That in his death the Society loses a valued co-worker, and the medical profession an able and earnest member; and be it

Resolved, That a copy of these resolutions be sent to the family of our departed associate, and a copy be recorded in the archives of the society, and that a copy be published in the official journal of this district, *Southwestern Medicine.*

For the Society,

FRANK E. MERA, Vice-President.
ROBERT O. BROWN, Secretary-Treasurer.



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REX DUNCAN, M.D.
Medical Director

CRYPTITIS AND PAPILLITIS

BY
W. R. JAMIESON, M. D., El Paso, Texas.

There is no pathological condition which will produce such mental and physical suffering, so out of proportion to the clinical findings, as will disease of the anus and the first two inches of the rectum above it.

One of the more common conditions to be found in this area, and one which is very often overlooked, is an inflammation of the columns and crypts of Morgagni, which, if it has been of long duration, usually has a concomitant papillitis, due to the irritation of the inflammatory secretion.

Examination of the anus through a proctoscope will show a number of longitudinal folds terminating near the internal sphincter, between each of which is a depression ending in a pocket. These folds and pockets are known as the columns and crypts of Morgagni. The ridge at the bottom of each two columns which forms the boundary of the crypt, is known as a semilunar valve.

Usually, a small papilla stands between each semilunar valve. Each column contains a vein and artery—the former often becoming varicose and producing hemorrhoids. On account of this the semilunar valves are held open and at times, become torn and inflamed through the passage of hard fecal matter, which may also find its way into the crypts with consequent inflammation and ulceration.

Symptoms

The principal symptom is pain of a dull aching character constantly nagging the patient, varied only by occasional lancinating or throbbing pain, as the congestion or inflammation degenerate into abscess formation. When the bowels move the pain is intensified and becomes neuralgic in type, so that the patient dreads the defecation and delays it until eventually constipation is established. The pain is increased during violent exercise and long continued work in the erect posture.

Sometimes the pain is referred to the prostate, subjecting that unfortunate gland to various curative measures which it does not merit.

Reflexly, also, cryptitis is the cause of painful urination as well as dysmenorrhea, amenorrhea, mucous urethritis, spasm of the sphincter and levator ani and neuralgic pains of the testis and perineum.

The mental condition of the patient is most distressing. What with the constant nagging ache, varying only to become worse, he loses weight and appetite, finally becoming so depressed that suicide is seriously considered.

Diagnosis

The diagnosis is comparatively easy. A Brinkerhoff or Humphrey

speculum, with a window on the side, is inserted and each crypt examined in turn with a probe bent so as to facilitate its entrance. Severe pain of a neuralgic type occurs when the infected crypt is entered.

Treatment

If the disease is of short duration swabbing out of the infected crypt with icthyol, mercurochrome, acriflavine or nitrate of silver solutions is indicated, the medicament being applied in the same manner as the disease was diagnosed.

However, in the large majority of cases the disease has not been recognized, the patients have been treated for fissure, hemorrhoids, neuralgia of the rectum, etc., so that radical procedures are necessary to perfect a cure, which consists in the extirpation of the diseased crypts.

Either local or general anesthesia may be used, depending on the mental state of the patient. I prefer to dilate the sphincter, as this allows more room for working and also does away with a great deal of pain following operation. A bent probe is passed to the bottom of the crypt and tissues put on stretch. Then with a pair of scissors curved on the flat the entire crypt and columns are excised.

Daily applications of mercurochrome 1% solution or sol. AgNo3 of other antiseptic are made until the raw surface heals.

PAPILLITIS

A tickling sensation as though worms were crawling in the anus is the most constant symptom of this disease, and it is very often overlooked. Examination of the dejecta are made and the rectum examined for pinworms, until somebody luckily hits upon the source of the mischief. Pain is not constant, but when present, is of a dull aching character.

Treatment

The sphincter is dilated either under general or local anesthesia, the papilla seized with forceps and tied off by suturing through its base with a double thread, cutting same and tying each side separately.

Case Report

F. Z., 46, male, entered my office complaining of dull aching pain in rectum and anus which he ascribed to piles. He said that he had lost 40 lbs. in about four months and that life was rapidly becoming unbearable, as he was unable to attend to his business, that of a small grocer.

Examination showed a small thrombotic hemorrhoid and a projecting tag of skin which was rather sensitive to touch, as well as a small internal hemorrhoid situated just above the external tag before mentioned.

Under general anesthesia, the sphincter was dilated and the thrombotic and internal hemorrhoid removed; at the base of the internal hemorrhoid a passage was discovered which ran downward into the pouch covered by the skin tag. This was excised and curetted. The patient

made an excellent recovery, rapidly gaining in weight and strength. The cut area was touched up with sol. mercurochrome 1% for about a week after operation.

Conclusions

More attention should be paid to obscure conditions around the anus and lower rectum, that is, more accurate information and less guesswork used. General terms such as neuralgia of the rectum, chronic prostatitis, etc., should not be employed unless there are definite clinical findings to support the diagnosis.

In every operation for hemorrhoids a probe should be passed into the crypts.

VASOSTOMY IN THE TREATMENT OF CHRONIC GONORRHEA

BY
C. L. McCLELLAND, M. D., Clovis, N. M.

My only excuse for offering this paper on such a limited experience and such an important subject, is the fact that my experience and observation with many other remedies has been so unsatisfactory.

"Any man can make a date to get a dose of Gonorrhea, but no man can make a date to get rid of it."

Vasostomy, Vasotomy ad Vas Puncture were never intended to supplant the ordinary treatment of Gonorrhea, such as irrigations and injections with the various antiseptic and astringent solutions, and even massage of the prostate and vesicles should be given a thorough trial before resorting to operative procedure. It will be recalled that the vasa and vesicles are lined with calumnar epithelium, and are free of glands and follicles which so thickly beset the stratified epithelium of the urethra and therefore furnish a more desirable method of attacking the infection.

It is not within the purview of this paper to elaborate on the different treatments of Gonorrhea. That alone would be a book within itself. I shall not even attempt to elaborate on the most ideal operation, (Vas puncture) for reasons which I will explain later.

It is an every day occurrence for the ordinary doctor to come in contact with one or more of old chronic intractable cases of Gonorrheal Vesicolitis, and allow me to pause long enough to say, that practically all cases of Gonorrhea of over four weeks standing have passed beyond the urethral canal. Irrigations do very little good after the disease passes into the Vassa, the Ampulla or the Vesicles.

Massage of the prostate and Vesicles followed by irrigations are very efficacious in some cases, but in the great majority of cases, the infection remains after the secretion is pressed out. You can press all the water you want to out of a sponge, and it will still be wet. After

these simple remedies have failed, then Vasostomy furnishes the best means of reaching the infected area.

First, I wish to speak briefly of Vas Puncture. This is a more ideal operation than Vasostomy in the hands of the specialists who are doing this work all the time, as it is less likely to traumatize the Vas with the resulting stricture or occlusion, but on the other hand it must be done with a sharp pointed needle which easily passes through the lumen of the Vas; unlike Veno-puncture, which has the blood to indicate the entrance into the vein, and the infection of the Silver Salts into the surrounding tissue, causes a very severe irritation and inflammation.

Vasotomy is an ideal operation if we could be sure there was no infection in the wound and that our medicine would not leak out into the surrounding tissue. But with Vasotomy you must make a new incision each time, but in vasostomy the incision may be left open for subsequent injections.

It is not claimed for Vasostomy, of course, that it will cure urethritis, which must have the usual treatment. Preparation for Vasostomy. The vesicles should be well massaged first, to empty out the contents so as to give room for the medicine. The patient should be shaved and prepared as for a major operation. Then anesthetize the field midway between the external abdominal ring and testicle with a 1% novocain or apothasine solution. The cord should be grasped between the thumb and finger above, and a pair of tonsils forceps below, at a point midway between the external abdominal ring and the testicle. An incision about one inch long is made over the cord and the facia dissected away, exposing the white shiny vas. A pair of haemostats are now passed beneath the Vas, and opened slightly so as to put the Vas on the stretch. Then a small sharp pointed bistoury is inserted into the lumen of the Vas, taking precaution not to injure the other side of the canal. By passing a silk-worm gut five or six inches, it is easy enough to establish the patency of the canal. The Haemastates are now closed and slipped to one side—distal from the incision, and the silk worm gut is passed into the Vesicles to establish the patence of the Vas. Then a 606 Luer needle which has been ground off blunt at the point, is passed over the silk worm gut, and the silk worm gut withdrawn, leaving the needle in the canal. Ten cc. of a 1/25000 Methylene blue solution is injected and the patient usually expresses a desire to urinate. If he does not, a small catheter should be passed to see if the blue solution entered the bladder. Of course if there is any occlusion, the operation should be abandoned.

Before proceeding further, a small strip of gauze-selvedge edge should be passed beneath the Vas and needle, and tied to prevent regurgitation of the medicament.

We are now ready for the injection.

Ten to twenty cc. of a 5% Callangol Sol is drawn into a Luer

Syringe and attached to the needle already in the Vas, and injected slowly. Callargol is the medicine of choice in these cases, as it is more penetrating than any of the other organic Silver Salts, and is more satisfactory to dissolve out the purulent exudate of the vesicles and less irritating should it regurgitate. Its effects are more permanent and the dark particles are sometimes passed for several days after the operation.

The injection of Callargol should be followed by one cc. of distilled water to wash out the Vas. The small strip of gauze is now removed from around the Vas and the silk woven gut again introduced through the needle and left in the Vas for subsequent injections if necessary. The finger should be pressed firmly over the wound, pressing the fluid toward the vesicles, and if any Collargol has found its way into the surrounding tissues, it should be cleansed with saline solution. The puncture should be done with a very fine pointed bistoury and the opening just large enough to admit the needle.

A silk worm gut is now passed beneath the Vas and its two free ends with the free end of the suture in the Vas, tied together. By the aid of this silk worm gut beneath, the Vas may be lifted into view and the needle again passed over the guide for repeated injections.

The wound is then closed in the ordinary manner and the patient put to bed for forty-eight hours or longer, according to the reaction.